# Screening Of Antimicrobial Activity Of *Neolamarckia Macrophylla* Leaves Crude Extract

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## ABSTRACT

**The genus Neolamarckia includes only two species, namely *N. macrophylla* and *N. cadamba. Many researches have been done on various aspect of N. cadamba including the antimicrobial, phytochemical and the use of its extract in would healing gel (Qureshi et al., 2021;Islam et al., 2015; Nayan et al, 2019 ). In contrary with N. cadamba, N. macrophylla rarely investigated. The aim of this study was to determine the antimicrobial potential of N. macrophylla leaf crude extract. The evaluation of antibacterial activity of Neolamarckia macrophylla leaves crude extract by using two solvent; ethanol and distilled water. The antibacterial activity was determined using disc diffusion method against E. coli, P. aeruginosa, S. typhimurium, L. monocytogenes, S. aureus and B. cereus with different concentrations of extract (12.5%, 50%, 75% and 100%). The test bacteria demonstrated inhibition zone between 7 to 10 mm with linear increase of inhibition zone with concentration of extract. This findings provide preliminary results on the antibacterial potential of N. Macrophylla to be used in various application. Further purification of compounds might be necessary to explore more on its optimum potential.***

## Sample Preparation

- The leaves were thoroughly washed with distilled water and dried at constant temperature, 40 degree Celsius for about 12 hours.
- Dried leaves were ground and 5 g of this powdered leaves were then soaked in 80% ethanol and distilled water separately.
- The mixture left for drying using rotary shaker.
- The mixture were then filtered and the filtrate dried and weighed. The crude extract dissolved in 10% DMSO for preparation of 100 mg/ml, 50 mg/ml, 25 mg/ml and 12.5 mg/ml concentration of extract.


**Figure 1: Drying of *N. macrophylla* leaves**

## Antibacterial Testing

All test bacteria were inoculated onto MHA plate. The discs (6 mm in diameter) of each extract and control (10% DMSO without extract) were impregnated onto MHA inoculated with each test bacteria. List of test bacteria:

***Bacillus cereus,***
***Staphylococcus aureus***
***Listeria monocytogenes***
***Pseudomonas aeruginosa***
***Escherichia coli***
***Salmonella typhimurium***

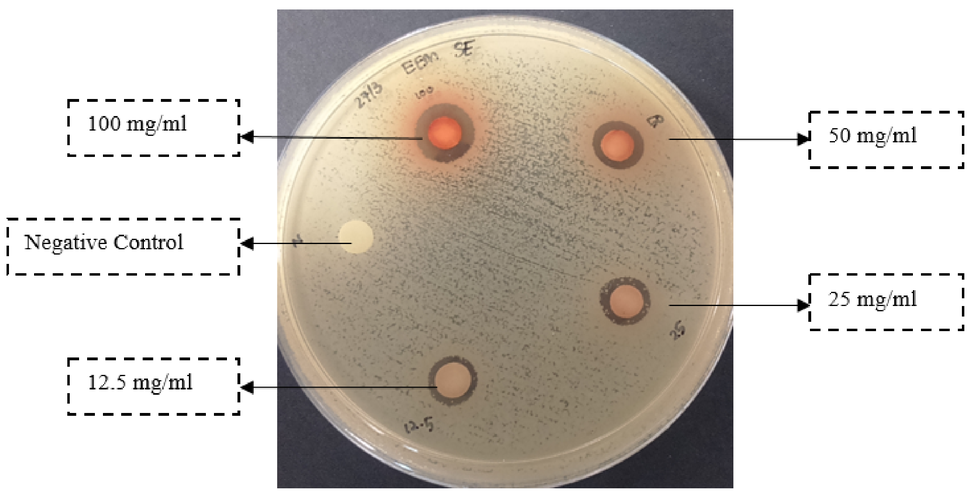


**Figure 2:** Zone of inhibition by ***N. macrophylla*** ethanol crude extract on ***Salmonella typhimurium***.

## Results & Discussion

**Table 1:** Inhibition zone diameter (mm) of aqueous and ethanol crude extract of *N. macrophylla* leaves used at different concentrations.

| Extract | Test Bacteria | Concentrations (mg/ml) 100 | 50 | 25 | 12.5 | (-) |
|---|---|---|---|---|---|---|
| Ethanol | *E. coli* | 8.00±0.00 | - | - | - | - |
| | *S. typhimurium* | 10.00±0.00 | 9.00±0.00 | 8.50±0.70 | 8.00±0.00 | - |
| | *P. aeruginosa* | 7.50±0.70 | 7.50±0.70 | - | - | - |
| | *L. monocytogenes* | 8.00±0.00 | - | - | - | - |
| | *S. aureus* | 8.75±0.35 | 7.50±0.70 | 7.00±0.00 | - | - |
| | *B. cereus* | 8.00±0.00 | 7.00±0.00 | - | - | - |
| Aqueous | *E. coli* | 7.00±0.00 | - | - | - | - |
| | *S. typhimurium* | 8.00±0.00 | 7.00±0.00 | - | - | - |
| | *P. aeruginosa* | 8.00±0.00 | 9.00±0.00 | 9.00±0.00 | 9.00±0.00 | - |
| | *L. monocytogenes* | 8.00±0.00 | 7.50±0.70 | - | - | - |
| | *S. aureus* | 8.50±0.00 | 7.50±0.70 | - | - | - |
| | *B. cereus* | 8.50±0.70 | 8.00±0.00 | 7.25±0.35 | - | - |

*Each data represent mean of duplicate ± S.D.*

**For the ethanol extract** all the test bacteria only showing an inhibition zone on the concentration of extract of **25 mg/ml and above EXCEPT** for ***S. typhimurium*** which showing inhibition zone even at the lowest extract concentration. ***S. typhimurium*** also the most susceptible when tested with the highest extract concentration.

**For Aqueous extract** all the test bacteria showing almost similar pattern of inhibition zone on the same concentration of extract **EXCEPT** for *P. aeruginosa* which exhibited almost constant inhibition zone with all extract concentration.

Generally, the diameter of zone of inhibition increases slightly with the increase of extract concentration. The results showed there is no significant different on zone of exhibition of test bacteria on both methanol extract and aqueous extract. However, the bacterial growth inhibition in both extracts probably caused by different bioactive compound as different solvent contribute to the extraction of different active compound during extraction process (Alabri et al., 2014).

## Conclusion

In summary, this preliminary study of *N. macrophylla* is necessary for gaining an insight of its antimicrobial potential. Althought the results obtained do not demonstrate a remarkable growth inhibition of the test bacteria, it still possess a good antibacterial activity.

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